



009848-0276371

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:)	Group Art Unit: 1642
PETER KUFER, et al)	Examiner: NYA
Serial No.:)	
09/744,625)	
Filed:)	
JULY 16, 2001)	
Title:		HETEROMINIBODIES

STATEMENT TO SUPPORT FILING AND SUBMISSION
IN ACCORDANCE WITH 37 C.F.R. §1.821-1.825

United States Patent and Trademark Office
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P.O. Box 2327
Arlington, VA 22202

Sir:

I hereby state that the content of the paper and computer readable copies of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c), (e), (f) and (g), or § 1.825(d) and (b), respectively, are the same.

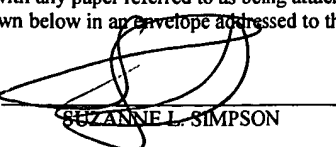
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Dated:

4/26/02

By:


SUZANNE L. SIMPSON

Applicant respectfully submits that the content of the sequence listing information recorded in computer readable form is identical to the written sequence listing and includes no new matter.

Respectfully submitted,

Pillsbury Winthrop LLP

By: _____

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CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

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Dated: 4/25/02

By: _____

SUZANNE L. SIMPSON



SEQUENCE LISTING

<110> Peter Kufer
Torsten Dreier
Patrick A. Baeuerle
Katrin Borschert
Florian Zettl

<120> Heterominibodies

<130> 009848/027 6371

<140> 09/744,625

<141> 2001-07-16

<150> EP 98 11 4082.5

<151> 1998-07-28

<160> 39

<170> PatentIn Ver. 2.1

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natural origin

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natural origin

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cattgag 67

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<222> (11)..(793)

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Ala Thr Gly Val His Ser Asp Ile Val Val Thr Gln Glu Ser Ala Leu
15 20 25

acc aca tca cct ggt gaa aca gtc aca ctc act tgt cgc tca agt act 145
Thr Thr Ser Pro Gly Glu Thr Val Thr Leu Thr Cys Arg Ser Ser Thr
30 35 40 45

ggg gct gtt aca act agt aac tat gcc aac tgg gtc caa gaa aaa cca 193
Gly Ala Val Thr Thr Ser Asn Tyr Ala Asn Trp Val Gln Glu Lys Pro
50 55 60

gat cat tta ttc act ggt cta ata ggt ggt acc aac aac cga gtt cca 241
Asp His Leu Phe Thr Gly Leu Ile Gly Gly Thr Asn Asn Arg Val Pro
65 70 75

ggt gtt cct gcc aga ttc tca ggc tcc ctg att gga gac aag gct gcc	289
Gly Val Pro Ala Arg Phe Ser Gly Ser Leu Ile Gly Asp Lys Ala Ala	
80 85 90	
ctc acc atc aca ggg gca cag act gag gat gag gca ata tat ttc tgt	337
Leu Thr Ile Thr Gly Ala Gln Thr Glu Asp Glu Ala Ile Tyr Phe Cys	
95 100 105	
gct cta tgg tac agc aac cat tgg gtg ttc ggt gga gga acc aaa ctc	385
Ala Leu Trp Tyr Ser Asn His Trp Val Phe Gly Gly Gly Thr Lys Leu	
110 115 120 125	
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Glu Val Leu Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly	
130 135 140	
ggt tct cag gtc cag ctg cag gag tct gga cct ggc ctg gtg gcg ccc	481
Gly Ser Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Ala Pro	
145 150 155	
tca cag agc ctg tcc atc aca tgc acc atc tca ggg ttc tca tta act	529
Ser Gln Ser Leu Ser Ile Thr Cys Thr Ile Ser Gly Phe Ser Leu Thr	
160 165 170	
aag tat ggt gta cac tgg gtt cgc cag cct cca gga aag ggt ctg gag	577
Lys Tyr Gly Val His Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu	
175 180 185	
tgg ctg gtg gtg ata tgg act gat gga ggc aca tcc tat aat tca gct	625
Trp Leu Val Val Ile Trp Thr Asp Gly Gly Thr Ser Tyr Asn Ser Ala	
190 195 200 205	
ctc aaa tcc aga ctg agc atc agc aag gac aac tcc aag agc caa gtt	673
Leu Lys Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val	
210 215 220	
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Phe Leu Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr Tyr	
225 230 235	
tgt gcc aga cag gat aga tac gac ggt gga att gct tac tgg ggc caa	769
Cys Ala Arg Gln Asp Arg Tyr Asp Gly Gly Ile Ala Tyr Trp Gly Gln	
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255 260	

<210> 27

<211> 261

<212> PRT

<213> Mus musculus

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Pro	Gly	Glu	Thr	Val	Thr	Leu	Thr	Cys	Arg	Ser	Ser	Thr	Gly	Ala	Val	
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Thr	Thr	Ser	Asn	Tyr	Ala	Asn	Trp	Val	Gln	Glu	Lys	Pro	Asp	His	Leu	
			50				55						60			
Phe	Thr	Gly	Leu	Ile	Gly	Gly	Thr	Asn	Asn	Arg	Val	Pro	Gly	Val	Pro	
			65				70						75			
Ala	Arg	Phe	Ser	Gly	Ser	Leu	Ile	Gly	Asp	Lys	Ala	Ala	Leu	Thr	Ile	
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Thr	Gly	Ala	Gln	Thr	Glu	Asp	Glu	Ala	Ile	Tyr	Phe	Cys	Ala	Leu	Trp	
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Tyr	Ser	Asn	His	Trp	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Val	Leu	
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Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gln	
			130						135						140	
Val	Gln	Leu	Gln	Glu	Ser	Gly	Pro	Gly	Leu	Val	Ala	Pro	Ser	Gln	Ser	
			145						150						155	
Leu	Ser	Ile	Thr	Cys	Thr	Ile	Ser	Gly	Phe	Ser	Leu	Thr	Lys	Tyr	Gly	
			165						170						175	
Val	His	Trp	Val	Arg	Gln	Pro	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Leu	Val	
			180						185						190	
Val	Ile	Trp	Thr	Asp	Gly	Gly	Thr	Ser	Tyr	Asn	Ser	Ala	Leu	Lys	Ser	
			195						200						205	
Arg	Leu	Ser	Ile	Ser	Lys	Asp	Asn	Ser	Lys	Ser	Gln	Val	Phe	Leu	Lys	
			210						215						220	
Met	Asn	Ser	Leu	Gln	Thr	Asp	Asp	Thr	Ala	Met	Tyr	Tyr	Cys	Ala	Arg	
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Gln	Asp	Arg	Tyr	Asp	Gly	Gly	Ile	Ala	Tyr	Trp	Gly	Gln	Gly	Thr	Thr	
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natural origin

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<212> DNA
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<222> (10)..(1359)

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aca ggt gta cac tcc gat atc cag ctg acc cag tct caa aaa ttc atg 99
Thr Gly Val His Ser Asp Ile Gln Leu Thr Gln Ser Gln Lys Phe Met
15 20 25 30

tcc aca tca gta gga gac agg gtc agc gtc acc tgc aag gcc agt cag 147
Ser Thr Ser Val Gly Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln
35 40 45

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Asn Val Gly Thr Asn Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser
50 55 60

cct aaa gca ctg att tac tcg gca tcc tac cgg tac agt gga gtc cct 243
Pro Lys Ala Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro
65 70 75

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Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile
80 85 90

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Ser Asn Val Gln Ser Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr	
95 100 105 110	
aac agc tat ccg ctc acg ttc ggt gct ggg acc aag ctc gag atc aaa	387
Asn Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys	
115 120 125	
ggt ggt ggt ggt tct ggc ggc ggc ggc tcc ggt ggt ggt ggt tct cag	435
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln	
130 135 140	
gtg aaa ctg cag gag tca gga cct ggc cta gtg cag ccc tca cag agc	483
Val Lys Leu Gln Glu Ser Gly Pro Gly Leu Val Gln Pro Ser Gln Ser	
145 150 155	
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Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr Gly	
160 165 170	
gta cac tgg gtt cgc cag tct cca gga aag ggt ctg gag tgg ctg gga	579
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175 180 185 190	
gtg ata tgg agt ggt gga agc aca gac tat aat gca gct ttc ata tcc	627
Val Ile Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala Ala Phe Ile Ser	
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Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Phe Lys	
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225 230 235	
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Met Glu Asn Trp Ser Phe Ala Tyr Trp Gly Gln Gly Thr Thr Val Thr	
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gtc tcc gaa ttc ccc aaa cct agc acc ccc cct ggc agc agt ggt gaa	819
Val Ser Glu Phe Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Glu	
255 260 265 270	
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Leu Glu Glu Leu Leu Lys His Leu Lys Glu Leu Leu Lys Gly Pro Arg	
275 280 285	
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Lys Gly Glu Leu Glu Glu Leu Leu Lys His Leu Lys Glu Leu Leu Lys	
290 295 300	
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Gly Gly Ser Gly Gly Ala Pro Ala Pro Thr Ser Ser Ser Thr Lys Lys	
305 310 315	
aca cag cta caa ctg gag cat tta ctg ctg gat tta cag atg att ttg	1011
Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu	
320 325 330	

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 335 340 345 350

ttt aag ttt tac atg ccc aag aag gcc aca gaa ctg aaa cat ctt cag 1107
 Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln
 355 360 365

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 Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala
 370 375 380

caa agc aaa aac ttt cac tta aga ccc agg gac tta atc agc aat atc 1203
 Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile
 385 390 395

aac gta ata gtt ctg gaa cta aag gga tct gaa aca aca ttc atg tgt 1251
 Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys
 400 405 410

gaa tat gct gat gag aca gca acc att gta gaa ttt ctg aac aga tgg 1299
 Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp
 415 420 425 430

att acc ttt tgt caa agc atc atc tca aca ctg act gac gtc cat cac 1347
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<213> Homo sapiens/Mus musculus

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 35 40 45

Gly Thr Asn Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys
 50 55 60

Ala Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg
 65 70 75 80

Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn
 85 90 95

Val Gln Ser Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Ser
 100 105 110

Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys Gly Gly
115 120 125
Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Lys
130 135 140
Leu Gln Glu Ser Gly Pro Gly Leu Val Gln Pro Ser Gln Ser Leu Ser
145 150 155 160
Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr Gly Val His
165 170 175
Trp Val Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Leu Gly Val Ile
180 185 190
Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala Ala Phe Ile Ser Arg Leu
195 200 205
Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Phe Lys Met Asn
210 215 220
Ser Leu Gln Ala Asn Asp Thr Ala Ile Tyr Tyr Cys Ala Arg Met Glu
225 230 235 240
Asn Trp Ser Phe Ala Tyr Trp Gly Gln Gly Thr Thr Val Thr Val Ser
245 250 255
Glu Phe Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Glu Leu Glu
260 265 270
Glu Leu Leu Lys His Leu Lys Glu Leu Leu Lys Gly Pro Arg Lys Gly
275 280 285
Glu Leu Glu Glu Leu Leu Lys His Leu Lys Glu Leu Leu Lys Gly Gly
290 295 300
Ser Gly Gly Ala Pro Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln
305 310 315 320
Leu Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly
325 330 335
Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys
340 345 350
Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu
355 360 365
Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser
370 375 380
Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val
385 390 395 400
Ile Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr
405 410 415
Ala Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr
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His His
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Thr Gly Val His Ser Asp Ile Gln Leu Thr Gln Ser Gln Lys Phe Met
15 20 25 30

tcc aca tca gta gga gac agg gtc agc gtc acc tgc aag gcc agt cag 147
Ser Thr Ser Val Gly Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln
35 40 45

aat gtg ggt act aat gta gcc tgg tat caa cag aaa cca ggg caa tct 195
Asn Val Gly Thr Asn Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser
50 55 60

cct aaa gca ctg att tac tcg gca tcc tac cgg tac agt gga gtc cct 243
Pro Lys Ala Leu Ile Tyr Ser Ser Tyr Arg Tyr Ser Gly Val Pro
65 70 75

gat cgc ttc aca ggc agt gga tct ggg aca gat ttc act ctc acc atc 291
Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile
80 85 90

agc aat gtg cag tct gaa gac ttg gca gag tat ttc tgt cag caa tat 339
Ser Asn Val Gln Ser Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr
95 100 105 110

aac agc tat ccg ctc acg ttc ggt gct ggg acc aag ctc gag atc aaa 387
Asn Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys
115 120 125

ggt ggt ggt ggt tct ggc ggc ggc ggc tcc ggt ggt ggt ggt tct cag 435
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
130 135 140

gtg aaa ctg cag gag tca gga cct ggc cta gtg cag ccc tca cag agc 483
Val Lys Leu Gln Glu Ser Gly Pro Gly Leu Val Gln Pro Ser Gln Ser
145 150 155

ctg tcc atc acc tgc aca gtc tct ggt ttc tca tta act agc tat ggt	531
Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr Gly	
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gta cac tgg gtt cgc cag tct cca gga aag ggt ctg gag tgg ctg gga	579
Val His Trp Val Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Leu Gly	
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gtg ata tgg agt ggt gga agc aca gac tat aat gca gct ttc ata tcc	627
Val Ile Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala Ala Phe Ile Ser	
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aga ctg agc atc agc aag gac aat tcc aag agc caa gtt ttc ttt aaa	675
Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Phe Lys	
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atg aac agt ctg caa gct aat gac aca gcc ata tat tac tgt gcc aga	723
Met Asn Ser Leu Gln Ala Asn Asp Thr Ala Ile Tyr Tyr Cys Ala Arg	
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atg gag aac tgg tgc ttt gct tac tgg ggc caa ggg acc acg gtc acc	771
Met Glu Asn Trp Ser Phe Ala Tyr Trp Gly Gln Gly Thr Thr Val Thr	
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gtc tcc gaa ttc acc ccg ctg ggt gac acc acc cac acc tcc gga aaa	819
Val Ser Glu Phe Thr Pro Leu Gly Asp Thr Thr His Thr Ser Gly Lys	
255 260 265 270	
cca ctg gat gga gaa tat ttc acc ctt cag atc cgt ggg cgt gag cgc	867
Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu Arg	
275 280 285	
ttc gag atg ttc cga gag ctg aat gag gcc ttg gaa ctc aag gat gcc	915
Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp Ala	
290 295 300	
cag gct ggg aag gag cca ggg ggg agc gga ggc gcg ccg gca cct act	963
Gln Ala Gly Lys Glu Pro Gly Gly Ser Gly Gly Ala Pro Ala Pro Thr	
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tca agt tct aca aag aaa aca cag cta caa ctg gag cat tta ctg ctg	1011
Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu Leu Leu	
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gat tta cag atg att ttg aat gga att aat aat tac aag aat ccc aaa	1059
Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys	
335 340 345 350	
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Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr	
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Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu	
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Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg Pro Arg	
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 Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser
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gaa aca aca ttc atg tgt gaa tat gct gat gag aca gca acc att gta 1299
 Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val
 415 420 425 430

gaa ttt ctg aac aga tgg att acc ttt tgt caa agc atc atc tca aca 1347
 Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr
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 35 40 45

Gly Thr Asn Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys
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Ala Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg
 65 70 75 80

Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn
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Val Gln Ser Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Ser
 100 105 110

Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys Gly Gly
 115 120 125

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Lys
 130 135 140

Leu Gln Glu Ser Gly Pro Gly Leu Val Gln Pro Ser Gln Ser Leu Ser
 145 150 155 160

Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr Gly Val His
 165 170 175

Trp Val Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Leu Gly Val Ile
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Trp	Ser	Gly	Gly	Ser	Thr	Asp	Tyr	Asn	Ala	Ala	Phe	Ile	Ser	Arg	Leu	195	200	205
Ser	Ile	Ser	Lys	Asp	Asn	Ser	Lys	Ser	Gln	Val	Phe	Phe	Lys	Met	Asn	210	215	220
Ser	Leu	Gln	Ala	Asn	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys	Ala	Arg	Met	Glu	225	230	235
Asn	Trp	Ser	Phe	Ala	Tyr	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	245	250	255
Glu	Phe	Thr	Pro	Leu	Gly	Asp	Thr	Thr	His	Thr	Ser	Gly	Lys	Pro	Leu	260	265	270
Asp	Gly	Glu	Tyr	Phe	Thr	Leu	Gln	Ile	Arg	Gly	Arg	Glu	Arg	Phe	Glu	275	280	285
Met	Phe	Arg	Glu	Leu	Asn	Glu	Ala	Leu	Glu	Leu	Lys	Asp	Ala	Gln	Ala	290	295	300
Gly	Lys	Glu	Pro	Gly	Gly	Ser	Gly	Gly	Ala	Pro	Ala	Pro	Thr	Ser	Ser	305	310	315
Ser	Thr	Lys	Lys	Thr	Gln	Leu	Gln	Leu	Glu	His	Leu	Leu	Leu	Asp	Leu	325	330	335
Gln	Met	Ile	Leu	Asn	Gly	Ile	Asn	Asn	Tyr	Lys	Asn	Pro	Lys	Leu	Thr	340	345	350
Arg	Met	Leu	Thr	Phe	Lys	Phe	Tyr	Met	Pro	Lys	Lys	Ala	Thr	Glu	Leu	355	360	365
Lys	His	Leu	Gln	Cys	Leu	Glu	Glu	Glu	Leu	Lys	Pro	Leu	Glu	Glu	Val	370	375	380
Leu	Asn	Leu	Ala	Gln	Ser	Lys	Asn	Phe	His	Leu	Arg	Pro	Arg	Asp	Leu	385	390	395
Ile	Ser	Asn	Ile	Asn	Val	Ile	Val	Leu	Glu	Leu	Lys	Gly	Ser	Glu	Thr	405	410	415
Thr	Phe	Met	Cys	Glu	Tyr	Ala	Asp	Glu	Thr	Ala	Thr	Ile	Val	Glu	Phe	420	425	430
Leu	Asn	Arg	Trp	Ile	Thr	Phe	Cys	Gln	Ser	Ile	Ile	Ser	Thr	Leu	Thr	435	440	445
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 Thr Gly Val His Ser Asp Ile Gln Leu Thr Gln Ser Pro Ala Ile Met
 15 20 25 30

tct gca tct cca ggg gaa aag gtc acc atg acc tgc agg gcc agc tca 147
 Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser
 35 40 45

agt gtt agt tcc agt tac ttg cac tgg tac cag cag aag tca ggt gcc 195
 Ser Val Ser Ser Ser Tyr Leu His Trp Tyr Gln Gln Lys Ser Gly Ala
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tcc ccc aaa ctc tgg att tat agc aca tcc aac ttg gct tct gga gtc 243
 Ser Pro Lys Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val
 65 70 75

cct gct cgc ttc agt ggc agt ggg tct ggg acc tct tac tct ctc aca 291
 Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr
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atc agc agt gtg gag gct gaa gat gct gcc act tat tac tgc cag cag 339
 Ile Ser Ser Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln
 95 100 105 110

tac agt ggt tac ccg tac acg ttc gga ggg ggg acc aag ctc gag atc 387
 Tyr Ser Gly Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 115 120 125

aaa ggt ggt ggt ggt tct ggc ggc ggc ggc tcc ggt ggt ggt ggt tct 435
 Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 130 135 140

cag gtg aaa ctg cag gag tct ggg gct gag ctt gtg aag cct ggg gct 483
 Gln Val Lys Leu Gln Glu Ser Gly Ala Glu Leu Val Lys Pro Gly Ala
 145 150 155

tca gtg aag ctg tcc tgc aag gct tct ggc tac acc ctc acc agc tac 531
 Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Leu Thr Ser Tyr
 160 165 170

tgg ttg cac tgg gtg aag cag tgg cct gga cga ggc ctt gag tgg att 579
 Trp Leu His Trp Val Lys Gln Trp Pro Gly Arg Gly Leu Glu Trp Ile
 175 180 185 190

gga agg att gat ccc aat agt ggt ggt act aag tac gat gag aag ttc 627

Gly	Arg	Ile	Asp	Pro	Asn	Ser	Gly	Gly	Thr	Lys	Tyr	Asp	Glu	Lys	Phe	
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Lys	Ser	Lys	Ala	Thr	Leu	Thr	Val	Asp	Lys	Pro	Ser	Ser	Thr	Ala	Tyr	
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atg	cag	ctc	agc	agc	ctg	aca	tct	gag	gac	tct	gcg	gtc	tat	tat	tgt	723
Met	Gln	Leu	Ser	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Val	Tyr	Tyr	Cys	
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gca	aga	tgg	gac	tac	tgg	ggc	caa	ggg	acc	acg	gtc	acc	gtc	tcc	tcc	771
Ala	Arg	Trp	Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	
	240					245					250					
gga	acc	ccg	ctg	ggc	gac	acc	acc	cac	act	agt	gga	aaa	cca	ctg	gat	819
Gly	Thr	Pro	Leu	Gly	Asp	Thr	Thr	His	Thr	Ser	Gly	Lys	Pro	Leu	Asp	
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Gly	Glu	Tyr	Phe	Thr	Leu	Gln	Ile	Arg	Gly	Arg	Glu	Arg	Phe	Glu	Met	
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ttc	cga	gag	ctg	aat	gag	gcc	ttg	gaa	ctc	aag	gat	gcc	cag	gct	ggg	915
Phe	Arg	Glu	Leu	Asn	Glu	Ala	Leu	Glu	Leu	Lys	Asp	Ala	Gln	Ala	Gly	
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Lys	Glu	Pro	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Thr	Gln	Val	Cys	Thr	
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Gly	Thr	Asp	Met	Lys	Leu	Arg	Leu	Pro	Ala	Ser	Pro	Glu	Thr	His	Leu	
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Asp	Met	Leu	Arg	His	Leu	Tyr	Gln	Gly	Cys	Gln	Val	Val	Gln	Gly	Asn	
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Leu	Glu	Leu	Thr	Tyr	Leu	Pro	Thr	Asn	Ala	Ser	Leu	Ser	Phe	Leu	Gln	
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gat	atc	cag	gag	gtg	cag	ggc	tac	gtg	ctc	atc	gct	cac	aac	caa	gtg	1155
Asp	Ile	Gln	Glu	Val	Gln	Gly	Tyr	Val	Leu	Ile	Ala	His	Asn	Gln	Val	
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Arg	Gln	Val	Pro	Leu	Gln	Arg	Leu	Arg	Ile	Val	Arg	Gly	Thr	Gln	Leu	
		385					390					395				
ttt	gag	gac	aac	tat	gcc	ctg	gcc	gtg	cta	gac	aat	gga	gac	ccg	ctg	1251
Phe	Glu	Asp	Asn	Tyr	Ala	Leu	Ala	Val	Leu	Asp	Asn	Gly	Asp	Pro	Leu	
	400					405					410					
aac	aat	acc	acc	cct	gtc	aca	ggg	gcc	tcc	cca	gga	ggc	ctg	cgg	gag	1299
Asn	Asn	Thr	Thr	Pro	Val	Thr	Gly	Ala	Ser	Pro	Gly	Gly	Leu	Arg	Glu	
415					420				425						430	

ctg cag ctt cga agc ctc aca gag atc ttg aaa gga ggg gtc ttg atc	1347
Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile	
435 440 445	
cag cgg aac ccc cag ctc tgc tac cag gac acg att ttg tgg aag gac	1395
Gln Arg Asn Pro Gln Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp	
450 455 460	
atc ttc cac aag aac aac cag ctg gct ctc aca ctg ata gac acc aac	1443
Ile Phe His Lys Asn Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn	
465 470 475	
cgc tct cgg gcc tgc cac ccc tgt tct ccg atg tgt aag ggc tcc cgc	1491
Arg Ser Arg Ala Cys His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg	
480 485 490	
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Cys Trp Gly Glu Ser Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val	
495 500 505 510	
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Cys Ala Gly Gly Cys Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys	
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Cys His Glu Gln Cys Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp	
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Cys Leu Ala Cys Leu His Phe Asn His Ser Gly Ile Cys Glu Leu His	
545 550 555	
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Cys Pro Ala Leu Val Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro	
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Asn Pro Glu Gly Arg Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys	
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Pro Tyr Asn Tyr Leu Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys	
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Pro Leu His Asn Gln Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys	
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Glu Lys Cys Ser Lys Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met	
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Glu His Leu Arg Glu Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu	
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Phe Ala Gly Cys Lys Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu	
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Ser Phe Asp Gly Asp Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu	
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cag ctc caa gtg ttt gag act ctg gaa gag atc aca ggt tac cta tac	2115
Gln Leu Gln Val Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr	
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Thr Leu Gln Gly Leu Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg	
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755 760 765	
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Phe Val His Thr Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln	
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Ala Leu Leu His Thr Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu	
785 790 795	
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Gly Leu Ala Cys His Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro	
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Gly Pro Thr Gln Cys Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu	
815 820 825 830	
tgc gtg gag gaa tgc cga gta ctg cag ggg ctc ccc agg gag tat gtg	2547
Cys Val Glu Glu Cys Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val	
835 840 845	
aat gcc agg cac tgt ttg ccg tgc cac cct gag tgt cag ccc cag aat	2595
Asn Ala Arg His Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn	
850 855 860	
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Gly Ser Val Thr Cys Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys	
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gcc cac tat aag gac cct ccc ttc tgc gtg gcc cgc tgc ccc agc ggt	2691
Ala His Tyr Lys Asp Pro Phe Cys Val Ala Arg Cys Pro Ser Gly	
880 885 890	
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Val Lys Pro Asp Leu Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu	
895 900 905 910	

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 Glu Gly Ala Cys Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val
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gac ctg gat gac aag ggc tgc ccc gcc gag cag aga gcc agc cct ctg 2835
 Asp Leu Asp Asp Lys Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu
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 Ser Ser Ser Tyr Leu His Trp Tyr Gln Gln Lys Ser Gly Ala Ser Pro
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 Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser
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 Ser Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser
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 Gly Tyr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Gly
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 130 135 140
 Lys Leu Gln Glu Ser Gly Ala Glu Leu Val Lys Pro Gly Ala Ser Val
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 Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Leu Thr Ser Tyr Trp Leu
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 His Trp Val Lys Gln Trp Pro Gly Arg Gly Leu Glu Trp Ile Gly Arg
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 Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asp Glu Lys Phe Lys Ser
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Lys	Ala	Thr	Leu	Thr	Val	Asp	Lys	Pro	Ser	Ser	Thr	Ala	Tyr	Met	Gln	210	215	220	
Leu	Ser	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Val	Tyr	Tyr	Cys	Ala	Arg	225	230	235	240
Trp	Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	Gly	Thr	245	250	255	
Pro	Leu	Gly	Asp	Thr	Thr	His	Thr	Ser	Gly	Lys	Pro	Leu	Asp	Gly	Glu	260	265	270	
Tyr	Phe	Thr	Leu	Gln	Ile	Arg	Gly	Arg	Glu	Arg	Phe	Glu	Met	Phe	Arg	275	280	285	
Glu	Leu	Asn	Glu	Ala	Leu	Glu	Leu	Lys	Asp	Ala	Gln	Ala	Gly	Lys	Glu	290	295	300	
Pro	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Thr	Gln	Val	Cys	Thr	Gly	Thr	305	310	315	320
Asp	Met	Lys	Leu	Arg	Leu	Pro	Ala	Ser	Pro	Glu	Thr	His	Leu	Asp	Met	325	330	335	
Leu	Arg	His	Leu	Tyr	Gln	Gly	Cys	Gln	Val	Val	Gln	Gly	Asn	Leu	Glu	340	345	350	
Leu	Thr	Tyr	Leu	Pro	Thr	Asn	Ala	Ser	Leu	Ser	Phe	Leu	Gln	Asp	Ile	355	360	365	
Gln	Glu	Val	Gln	Gly	Tyr	Val	Leu	Ile	Ala	His	Asn	Gln	Val	Arg	Gln	370	375	380	
Val	Pro	Leu	Gln	Arg	Leu	Arg	Ile	Val	Arg	Gly	Thr	Gln	Leu	Phe	Glu	385	390	395	400
Asp	Asn	Tyr	Ala	Leu	Ala	Val	Leu	Asp	Asn	Gly	Asp	Pro	Leu	Asn	Asn	405	410	415	
Thr	Thr	Pro	Val	Thr	Gly	Ala	Ser	Pro	Gly	Gly	Leu	Arg	Glu	Leu	Gln	420	425	430	
Leu	Arg	Ser	Leu	Thr	Glu	Ile	Leu	Lys	Gly	Gly	Val	Leu	Ile	Gln	Arg	435	440	445	
Asn	Pro	Gln	Leu	Cys	Tyr	Gln	Asp	Thr	Ile	Leu	Trp	Lys	Asp	Ile	Phe	450	455	460	
His	Lys	Asn	Asn	Gln	Leu	Ala	Leu	Thr	Leu	Ile	Asp	Thr	Asn	Arg	Ser	465	470	475	480
Arg	Ala	Cys	His	Pro	Cys	Ser	Pro	Met	Cys	Lys	Gly	Ser	Arg	Cys	Trp	485	490	495	
Gly	Glu	Ser	Ser	Glu	Asp	Cys	Gln	Ser	Leu	Thr	Arg	Thr	Val	Cys	Ala	500	505	510	
Gly	Gly	Cys	Ala	Arg	Cys	Lys	Gly	Pro	Leu	Pro	Thr	Asp	Cys	Cys	His	515	520	525	

Glu	Gln	Cys	Ala	Ala	Gly	Cys	Thr	Gly	Pro	Lys	His	Ser	Asp	Cys	Leu	530	535	540	
Ala	Cys	Leu	His	Phe	Asn	His	Ser	Gly	Ile	Cys	Glu	Leu	His	Cys	Pro	545	550	555	560
Ala	Leu	Val	Thr	Tyr	Asn	Thr	Asp	Thr	Phe	Glu	Ser	Met	Pro	Asn	Pro	565	570	575	
Glu	Gly	Arg	Tyr	Thr	Phe	Gly	Ala	Ser	Cys	Val	Thr	Ala	Cys	Pro	Tyr	580	585	590	
Asn	Tyr	Leu	Ser	Thr	Asp	Val	Gly	Ser	Cys	Thr	Leu	Val	Cys	Pro	Leu	595	600	605	
His	Asn	Gln	Glu	Val	Thr	Ala	Glu	Asp	Gly	Thr	Gln	Arg	Cys	Glu	Lys	610	615	620	
Cys	Ser	Lys	Pro	Cys	Ala	Arg	Val	Cys	Tyr	Gly	Leu	Gly	Met	Glu	His	625	630	635	640
Leu	Arg	Glu	Val	Arg	Ala	Val	Thr	Ser	Ala	Asn	Ile	Gln	Glu	Phe	Ala	645	650	655	
Gly	Cys	Lys	Lys	Ile	Phe	Gly	Ser	Leu	Ala	Phe	Leu	Pro	Glu	Ser	Phe	660	665	670	
Asp	Gly	Asp	Pro	Ala	Ser	Asn	Thr	Ala	Pro	Leu	Gln	Pro	Glu	Gln	Leu	675	680	685	
Gln	Val	Phe	Glu	Thr	Leu	Glu	Glu	Ile	Thr	Gly	Tyr	Leu	Tyr	Ile	Ser	690	695	700	
Ala	Trp	Pro	Asp	Ser	Leu	Pro	Asp	Leu	Ser	Val	Phe	Gln	Asn	Leu	Gln	705	710	715	720
Val	Ile	Arg	Gly	Arg	Ile	Leu	His	Asn	Gly	Ala	Tyr	Ser	Leu	Thr	Leu	725	730	735	
Gln	Gly	Leu	Gly	Ile	Ser	Trp	Leu	Gly	Leu	Arg	Ser	Leu	Arg	Glu	Leu	740	745	750	
Gly	Ser	Gly	Leu	Ala	Leu	Ile	His	His	Asn	Thr	His	Leu	Cys	Phe	Val	755	760	765	
His	Thr	Val	Pro	Trp	Asp	Gln	Leu	Phe	Arg	Asn	Pro	His	Gln	Ala	Leu	770	775	780	
Leu	His	Thr	Ala	Asn	Arg	Pro	Glu	Asp	Glu	Cys	Val	Gly	Glu	Gly	Leu	785	790	795	800
Ala	Cys	His	Gln	Leu	Cys	Ala	Arg	Gly	His	Cys	Trp	Gly	Pro	Gly	Pro	805	810	815	
Thr	Gln	Cys	Val	Asn	Cys	Ser	Gln	Phe	Leu	Arg	Gly	Gln	Glu	Cys	Val	820	825	830	
Glu	Glu	Cys	Arg	Val	Leu	Gln	Gly	Leu	Pro	Arg	Glu	Tyr	Val	Asn	Ala	835	840	845	

Arg	His	Cys	Leu	Pro	Cys	His	Pro	Glu	Cys	Gln	Pro	Gln	Asn	Gly	Ser
850						855					860				
Val	Thr	Cys	Phe	Gly	Pro	Glu	Ala	Asp	Gln	Cys	Val	Ala	Cys	Ala	His
865					870					875					880
Tyr	Lys	Asp	Pro	Pro	Phe	Cys	Val	Ala	Arg	Cys	Pro	Ser	Gly	Val	Lys
			885						890					895	
Pro	Asp	Leu	Ser	Tyr	Met	Pro	Ile	Trp	Lys	Phe	Pro	Asp	Glu	Glu	Gly
		900						905					910		
Ala	Cys	Gln	Pro	Cys	Pro	Ile	Asn	Cys	Thr	His	Ser	Cys	Val	Asp	Leu
		915					920					925			
Asp	Asp	Lys	Gly	Cys	Pro	Ala	Glu	Gln	Arg	Ala	Ser	Pro	Leu	Thr	Ser
	930					935					940				
Gly	His	His	His	His	His	His									
945						950									

<210> 36
 <211> 1630
 <212> DNA
 <213> Homo sapiens/Mus musculus

<220>
 <221> CDS
 <222> (39)..(1607)

<400> 36
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 Met Gly Trp Ser Cys Ile
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atc	ctc	ttc	ttg	gta	gca	aca	gct	aca	ggg	gta	cac	tcc	gag	ctc	cag	104
Ile	Leu	Phe	Leu	Val	Ala	Thr	Ala	Thr	Gly	Val	His	Ser	Glu	Leu	Gln	
			10					15					20			
atg	acc	cag	tct	cca	tcc	tcc	ctg	tct	gca	tct	gta	gga	gac	aga	gtc	152
Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	Asp	Arg	Val	
		25					30					35				
acc	atc	act	tgc	cgg	gca	agt	cag	agc	att	agc	agc	tat	tta	aat	tgg	200
Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Ser	Ser	Tyr	Leu	Asn	Trp	
	40					45					50					
tat	cag	cag	aaa	cca	gga	cag	cct	cct	aag	ctg	ctc	att	tac	tgg	gca	248
Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys	Leu	Leu	Ile	Tyr	Trp	Ala	
	55				60					65					70	
tct	acc	cgg	gaa	tcc	ggg	gtc	cct	gac	cga	ttc	agc	ggc	agt	gaa	tct	296
Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg	Phe	Ser	Gly	Ser	Glu	Ser	
			75						80					85		
ggg	aca	aat	tac	act	ctc	acc	atc	agc	agc	ctg	cag	cct	gaa	gat	ttt	344
Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	Glu	Asp	Phe	
		90						95					100			

gct act tac ttt tgt caa cag tct gac agt ttg ccg atc acc ttc ggc	392
Ala Thr Tyr Phe Cys Gln Gln Ser Asp Ser Leu Pro Ile Thr Phe Gly	
105 110 115	
caa ggg aca cga ctg gac att caa gga gga gga gga tca ggt ggt ggt	440
Gln Gly Thr Arg Leu Asp Ile Gln Gly Gly Gly Gly Ser Gly Gly Gly	
120 125 130	
ggt agc ggc ggc ggc ggc tca gag gtg cag ctg ctc gag tct ggg gga	488
Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Leu Glu Ser Gly Gly	
135 140 145 150	
ggc gtg gtc cag cct ggg agg tcc ctg aga ctc tcc tgt gca gcc tct	536
Gly Val Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser	
155 160 165	
gga ttc acc ttc agt agc tat ggc atg cac tgg gtc cgc cag gct cca	584
Gly Phe Thr Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Ala Pro	
170 175 180	
ggc aag ggg ctg gag tgg gtg gca gtt ata tca tat gat gga agt aat	632
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Ser Tyr Asp Gly Ser Asn	
185 190 195	
aaa tac tat gca gac tcc gtg aag ggc cga ttc acc atc tcc aga gac	680
Lys Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp	
200 205 210	
aat tcc aag aac acg ctg tat ctg caa atg aac agc ctg aga gct gag	728
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu	
215 220 225 230	
gac acg gct gtg tat tac tgt gcg aaa gat atg ggg tgg ggc agt ggc	776
Asp Thr Ala Val Tyr Tyr Cys Ala Lys Asp Met Gly Trp Gly Ser Gly	
235 240 245	
tgg aga ccc tac tac tac tac ggt atg gac gtc tgg ggc caa ggg acc	824
Trp Arg Pro Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly Thr	
250 255 260	
acg gtc acc gtc tcc tcc gga acc ccg ctg ggt gac acc acc cac acc	872
Thr Val Thr Val Ser Ser Gly Thr Pro Leu Gly Asp Thr Thr His Thr	
265 270 275	
gct agc acc aag ggc cca tcg gtc ttc ccc ctg gca ccc tcc tcc aag	920
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys	
280 285 290	
agc acc tct ggg ggc aca gcg gcc ctg ggc tgc ctg gtc aag gac tac	968
Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr	
295 300 305 310	
ttc ccc gaa ccg gtg acg gtg tcg tgg aac tca ggc gcc ctg acc agc	1016
Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser	
315 320 325	
ggc gtg cac acc ttc ccg gct gtc cta cag tcc tca gga ctc tac tcc	1064
Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser	
330 335 340	

ctc agc agc gtg gtg acc gtg ccc tcc agc agc ttg ggc acc cag acc	1112
Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr	
345 350 355	
tac atc tgc aac gtg aat cac aag ccc agc aac acc aag gtg gac aag	1160
Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys	
360 365 370	
aaa gtt gag ccc aaa tct tgt gac aaa act agt gga ggc ggt ggg tcc	1208
Lys Val Glu Pro Lys Ser Cys Asp Lys Thr Ser Gly Gly Gly Gly Ser	
375 380 385 390	
gca ccc gcc cgc tgc ccc agc ccc agc acg cag ccc tgg gag cat gtg	1256
Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His Val	
395 400 405	
aat gcc atc cag gag gcc cgg cgt ctc ctg aac ctg agt aga gac act	1304
Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp Thr	
410 415 420	
gct gct gag atg aat gaa aca gta gaa gtc atc tca gaa atg ttt gac	1352
Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe Asp	
425 430 435	
ctc cag gag ccg acc tgc cta cag acc cgc ctg gag ctg tac aag cag	1400
Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys Gln	
440 445 450	
ggc ctg cgg ggc agc ctc acc aag ctc aag ggc ccc ttg acc atg atg	1448
Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met Met	
455 460 465 470	
gcc agc cac tac aag cag cac tgc cct cca acc ccg gaa act tcc tgt	1496
Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser Cys	
475 480 485	
gca acc cag att atc acc ttt gaa agt ttc aaa gag aac ctg aag gac	1544
Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys Asp	
490 495 500	
ttt ctg ctt gtc atc ccc ttt gac tgc tgg gag cca gtc cag gag cat	1592
Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu His	
505 510 515	
cat cac cat cat cat tgagtcgact taaaacagct ctg	1630
His His His His	
520	

<210> 37

<211> 523

<212> PRT

<213> Homo sapiens/Mus musculus

<400> 37

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
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Val	His	Ser	Glu	Leu	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala		
			20					25					30				
Ser	Val	Gly	Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile		
		35					40					45					
Ser	Ser	Tyr	Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro	Lys		
		50				55					60						
Leu	Leu	Ile	Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	Pro	Asp	Arg		
65					70					75					80		
Phe	Ser	Gly	Ser	Glu	Ser	Gly	Thr	Asn	Tyr	Thr	Leu	Thr	Ile	Ser	Ser		
				85					90					95			
Leu	Gln	Pro	Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ser	Asp	Ser		
			100					105					110				
Leu	Pro	Ile	Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Asp	Ile	Gln	Gly	Gly		
		115					120					125					
Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Glu	Val	Gln		
		130				135						140					
Leu	Leu	Glu	Ser	Gly	Gly	Gly	Val	Val	Gln	Pro	Gly	Arg	Ser	Leu	Arg		
145					150					155					160		
Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	Gly	Met	His		
			165						170					175			
Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val	Ala	Val	Ile		
			180					185					190				
Ser	Tyr	Asp	Gly	Ser	Asn	Lys	Tyr	Tyr	Ala	Asp	Ser	Val	Lys	Gly	Arg		
		195				200						205					
Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ser	Lys	Asn	Thr	Leu	Tyr	Leu	Gln	Met		
		210				215					220						
Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	Ala	Lys	Asp		
225					230					235					240		
Met	Gly	Trp	Gly	Ser	Gly	Trp	Arg	Pro	Tyr	Tyr	Tyr	Tyr	Gly	Met	Asp		
			245						250					255			
Val	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	Gly	Thr	Pro	Leu		
			260					265					270				
Gly	Asp	Thr	Thr	His	Thr	Ala	Ser	Thr	Lys	Gly	Pro	Ser	Val	Phe	Pro		
		275					280					285					
Leu	Ala	Pro	Ser	Ser	Lys	Ser	Thr	Ser	Gly	Gly	Thr	Ala	Ala	Leu	Gly		
		290				295					300						
Cys	Leu	Val	Lys	Asp	Tyr	Phe	Pro	Glu	Pro	Val	Thr	Val	Ser	Trp	Asn		
305					310					315					320		
Ser	Gly	Ala	Leu	Thr	Ser	Gly	Val	His	Thr	Phe	Pro	Ala	Val	Leu	Gln		
			325					330						335			

Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
 340 345 350
 Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser
 355 360 365
 Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr
 370 375 380
 Ser Gly Gly Gly Gly Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr
 385 390 395 400
 Gln Pro Trp Glu His Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu
 405 410 415
 Asn Leu Ser Arg Asp Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val
 420 425 430
 Ile Ser Glu Met Phe Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg
 435 440 445
 Leu Glu Leu Tyr Lys Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys
 450 455 460
 Gly Pro Leu Thr Met Met Ala Ser His Tyr Lys Gln His Cys Pro Pro
 465 470 475 480
 Thr Pro Glu Thr Ser Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe
 485 490 495
 Lys Glu Asn Leu Lys Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp
 500 505 510
 Glu Pro Val Gln Glu His His His His His His
 515 520

<210> 38
 <211> 1630
 <212> DNA
 <213> Homo sapiens/Mus musculus

<220>
 <221> CDS
 <222> (39)..(1610)

<400> 38
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 Met Gly Trp Ser Cys Ile
 1 5
 atc ctc ttc ttg gta gca aca gct aca ggt gta cac tcc gag ctc cag 104
 Ile Leu Phe Leu Val Ala Thr Ala Thr Gly Val His Ser Glu Leu Gln
 10 15 20
 atg acc cag tct cca tcc tcc ctg tct gca tct gta gga gac aga gtc 152
 Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val
 25 30 35

acc atc act tgc cgg gca agt cag agc att agc agc tat tta aat tgg	200
Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Tyr Leu Asn Trp	
40 45 50	
tat cag cag aaa cca gga cag cct cct aag ctg ctc att tac tgg gca	248
Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys Leu Leu Ile Tyr Trp Ala	
55 60 65 70	
tct acc cgg gaa tcc ggg gtc cct gac cga ttc agc ggc agt gaa tct	296
Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Glu Ser	
75 80 85	
ggg aca aat tac act ctc acc atc agc agc ctg cag cct gaa gat ttt	344
Gly Thr Asn Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe	
90 95 100	
gct act tac ttt tgt caa cag tct gac agt ttg ccg atc acc ttc ggc	392
Ala Thr Tyr Phe Cys Gln Gln Ser Asp Ser Leu Pro Ile Thr Phe Gly	
105 110 115	
caa ggg aca cga ctg gac att caa gga gga gga gga tca ggt ggt ggt	440
Gln Gly Thr Arg Leu Asp Ile Gln Gly Gly Gly Gly Ser Gly Gly Gly	
120 125 130	
ggg agc ggc ggc ggc ggc tca gag gtg cag ctg ctc gag tct ggg gga	488
Gly Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Leu Glu Ser Gly Gly	
135 140 145 150	
ggc gtg gtc cag cct ggg agg tcc ctg aga ctc tcc tgt gca gcc tct	536
Gly Val Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser	
155 160 165	
gga ttc acc ttc agt agc tat ggc atg cac tgg gtc cgc cag gct cca	584
Gly Phe Thr Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Ala Pro	
170 175 180	
ggc aag ggg ctg gag tgg gtg gca gtt ata tca tat gat gga agt aat	632
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Ser Tyr Asp Gly Ser Asn	
185 190 195	
aaa tac tat gca gac tcc gtg aag ggc cga ttc acc atc tcc aga gac	680
Lys Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp	
200 205 210	
aat tcc aag aac acg ctg tat ctg caa atg aac agc ctg aga gct gag	728
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu	
215 220 225 230	
gac acg gct gtg tat tac tgt gcg aaa gat atg ggg tgg ggc agt ggc	776
Asp Thr Ala Val Tyr Tyr Cys Ala Lys Asp Met Gly Trp Gly Ser Gly	
235 240 245	
tgg aga ccc tac tac tac tac ggt atg gac gtc tgg ggc caa ggg acc	824
Trp Arg Pro Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly Thr	
250 255 260	
acg gtc acc gtc tcc tcc gga acc ccg ctg ggt gac acc acc cac acc	872
Thr Val Thr Val Ser Ser Gly Thr Pro Leu Gly Asp Thr Thr His Thr	
265 270 275	

cgt acg gtg gct gca cca tct gtc ttc atc ttc ccg cca tct gat gag	920
Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu	
280 285 290	
cag ttg aaa tct gga act gcc tct gtt gtg tgc ctg ctg aat aac ttc	968
Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe	
295 300 305 310	
tat ccc aga gag gcc aaa gta cag tgg aag gtg gat aac gcc ctc caa	1016
Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln	
315 320 325	
tcg ggt aac tcc cag gag agt gtc aca gag cag gac agc aag gac agc	1064
Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser	
330 335 340	
acc tac agc ctc agc agc acc ctg acg ctg agc aaa gca gac tac gag	1112
Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu	
345 350 355	
aaa cac aaa gtc tac gcc tgc gaa gtc acc cat cag ggc ctg agc tcg	1160
Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser	
360 365 370	
ccc gtc aca aag agc ttc aac agg gga gag tgt tca gga ggc ggt ggg	1208
Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys Ser Gly Gly Gly Gly	
375 380 385 390	
tct gca cct act tca agt tct aca aag aaa aca cag cta caa ctg gag	1256
Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu	
395 400 405	
cat tta ctg ctg gat tta cag atg att ttg aat gga att aat aat tac	1304
His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr	
410 415 420	
aag aat ccc aaa ctc acc agg atg ctc aca ttt aag ttt tac atg ccc	1352
Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro	
425 430 435	
aag aag gcc aca gaa ctg aaa cat ctt cag tgt cta gaa gaa gaa ctc	1400
Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu	
440 445 450	
aaa cct ctg gag gaa gtg cta aat tta gct caa agc aaa aac ttt cac	1448
Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His	
455 460 465 470	
tta aga ccc agg gac tta atc agc aat atc aac gta ata gtt ctg gaa	1496
Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu	
475 480 485	
cta aag gga tct gaa aca aca ttc atg tgt gaa tat gct gat gag aca	1544
Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr	
490 495 500	
gca acc att gta gaa ttt ctg aac aga tgg att acc ttt tgt caa agc	1592
Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser	
505 510 515	

atc atc tca aca cta act tgataagtcg acttaaaaca
 ile ile ser thr leu thr
 520

1630

<210> 39
 <211> 524
 <212> PRT
 <213> Homo sapiens/Mus musculus

<400> 39
 Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
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 Val His Ser Glu Leu Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala
 20 25 30
 Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile
 35 40 45
 Ser Ser Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Lys
 50 55 60
 Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg
 65 70 75 80
 Phe Ser Gly Ser Glu Ser Gly Thr Asn Tyr Thr Leu Thr Ile Ser Ser
 85 90 95
 Leu Gln Pro Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Ser Asp Ser
 100 105 110
 Leu Pro Ile Thr Phe Gly Gln Gly Thr Arg Leu Asp Ile Gln Gly Gly
 115 120 125
 Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Val Gln
 130 135 140
 Leu Leu Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg Ser Leu Arg
 145 150 155 160
 Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr Gly Met His
 165 170 175
 Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Val Ile
 180 185 190
 Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala Asp Ser Val Lys Gly Arg
 195 200 205
 Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met
 210 215 220
 Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys Asp
 225 230 235 240
 Met Gly Trp Gly Ser Gly Trp Arg Pro Tyr Tyr Tyr Tyr Gly Met Asp
 245 250 255

Val	Trp	Gly	Gln	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser	Gly	Thr	Pro	Leu	260	265	270
Gly	Asp	Thr	Thr	His	Thr	Arg	Thr	Val	Ala	Ala	Pro	Ser	Val	Phe	Ile	275	280	285
Phe	Pro	Pro	Ser	Asp	Glu	Gln	Leu	Lys	Ser	Gly	Thr	Ala	Ser	Val	Val	290	295	300
Cys	Leu	Leu	Asn	Asn	Phe	Tyr	Pro	Arg	Glu	Ala	Lys	Val	Gln	Trp	Lys	305	310	315
Val	Asp	Asn	Ala	Leu	Gln	Ser	Gly	Asn	Ser	Gln	Glu	Ser	Val	Thr	Glu	325	330	335
Gln	Asp	Ser	Lys	Asp	Ser	Thr	Tyr	Ser	Leu	Ser	Ser	Thr	Leu	Thr	Leu	340	345	350
Ser	Lys	Ala	Asp	Tyr	Glu	Lys	His	Lys	Val	Tyr	Ala	Cys	Glu	Val	Thr	355	360	365
His	Gln	Gly	Leu	Ser	Ser	Pro	Val	Thr	Lys	Ser	Phe	Asn	Arg	Gly	Glu	370	375	380
Cys	Ser	Gly	Gly	Gly	Gly	Ser	Ala	Pro	Thr	Ser	Ser	Ser	Thr	Lys	Lys	385	390	395
Thr	Gln	Leu	Gln	Leu	Glu	His	Leu	Leu	Leu	Asp	Leu	Gln	Met	Ile	Leu	405	410	415
Asn	Gly	Ile	Asn	Asn	Tyr	Lys	Asn	Pro	Lys	Leu	Thr	Arg	Met	Leu	Thr	420	425	430
Phe	Lys	Phe	Tyr	Met	Pro	Lys	Lys	Ala	Thr	Glu	Leu	Lys	His	Leu	Gln	435	440	445
Cys	Leu	Glu	Glu	Glu	Leu	Lys	Pro	Leu	Glu	Glu	Val	Leu	Asn	Leu	Ala	450	455	460
Gln	Ser	Lys	Asn	Phe	His	Leu	Arg	Pro	Arg	Asp	Leu	Ile	Ser	Asn	Ile	465	470	475
Asn	Val	Ile	Val	Leu	Glu	Leu	Lys	Gly	Ser	Glu	Thr	Thr	Phe	Met	Cys	485	490	495
Glu	Tyr	Ala	Asp	Glu	Thr	Ala	Thr	Ile	Val	Glu	Phe	Leu	Asn	Arg	Trp	500	505	510
Ile	Thr	Phe	Cys	Gln	Ser	Ile	Ile	Ser	Thr	Leu	Thr					515	520	